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Abstract

Background
This article assesses the association between self-rated mental health and selected World Mental Health-Composite International Diagnostic Interview (WMH-CIDI)-measured disorders, self-reported diagnoses of mental disorders, and psychological distress in the Canadian population.

Data and methods
Data are from the 2002 Canadian Community Health Survey: Mental Health and Well-being. Weighted frequencies and cross-tabulations were used to estimate the prevalence of each mental morbidity measure and self-rated mental health by selected characteristics. Mean self-rated mental health scores were calculated for each mental morbidity measure. The association between self-rated mental health and each mental morbidity measure was analysed with logistic regression models.

Results
In 2002, an estimated 1.7 million Canadians aged 15 or older (7%) rated their mental health as fair or poor. Respondents classified with mental morbidity consistently reported lower mean self-rated mental health (SRMH) and had significantly higher odds of reporting fair/poor mental health than did those not classified with mental morbidity. Gradients in mean SRMH scores and odds of reporting fair/poor mental health by recency of WMH-CIDI-measured mental disorders were apparent. A sizeable percentage of respondents classified as having a mental morbidity did not perceive their mental health as fair/poor.

Interpretation
Although self-rated mental health is not a substitute for specific mental health measures it is potentially useful for monitoring general mental health.

Keywords
agoraphobia, bipolar disorder, depression, panic disorder, social phobia, perceived mental health, population health surveys

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Studies of the extent to which the widely used measure, self-rated *health*, captures *mental* health[1-3] suggest the need for a specific self-rated mental health (SRMH) measure. In fact, a number of surveys in Canada and worldwide have used such a measure: for example, the Ontario Health Survey: Mental Health Supplement; the Canadian Community Health Survey; and the World Mental Health Initiative Surveys in 28 countries.

Recent research has demonstrated associations between SRMH and social class,[4] family support and family cultural conflict,[5] community belonging,[6] service use,[7-11] continuation of antidepressant therapy,[12] and distress, activity restriction and social role functioning.[13] However, relatively little is known about what SRMH actually represents and how well it measures current mental health status and predicts future mental health status.[13] Only one study[13] has examined cross-sectional associations between SRMH and a range of validated mental health measures. The study found that SRMH was correlated more strongly with self-rated general health than with the mental health measures that were examined. The current study evaluates associations between SRMH and a wider range of mental health measures and uses different analytic techniques than the aforementioned study.

Data and methods

Data source

This analysis is based on data from the 2002 Canadian Community Health Survey cycle 1.2: Mental Health and Well-being, which began in May 2002 and was conducted over eight months. It is the only Statistics Canada population survey that includes both self-rated mental health and several specific and non-specific measures of mental morbidity. It covered people aged 15 or older living in private dwellings in the 10 provinces. Residents of institutions, Indian reserves, certain remote areas and the three territories, and full-time members of the Canadian Forces were excluded.

The sample was selected using the area frame for the Labour Force Survey. A multi-stage stratified cluster design was used to sample dwellings within

this area frame. One person aged 15 or older was randomly selected from each sampled household. Respondents were chosen to overrepresent young people (15 to 24) and seniors (65 or older), thereby ensuring adequate sample sizes for these age groups. More detailed descriptions of the design, sample and interview procedures can be found in other reports and on Statistics Canada's website.[14,15]

All interviews were conducted using a computer-assisted application. Most interviews (86%) were conducted in person; the remainder, by telephone. Proxy responses were not accepted. The responding sample comprised 36,984 persons aged 15 or older, for a response rate of 77%.

Analytical techniques

Cross-tabulations were used to estimate the prevalence of and characteristics associated with each mental morbidity and with levels of SRMH.

Mean SRMH scores were calculated for respondents with each mental morbidity. Significant differences in mean scores between respondents with and without each morbidity were examined.

Unadjusted logistic regression models were used to assess the association between each mental morbidity and SRMH. For each morbidity, multivariate logistic regression models that controlled for sex, age, marital status, education, household income, immigrant status and the presence of chronic physical conditions were also used. Proportional odds models were not used because the proportional odds assumption is not met.

All estimates and analyses were based on weighted data that reflect the age and sex distribution of the household population aged 15 or older in the 10 provinces in 2002. To account for survey design effects, standard errors and coefficients of variation were estimated with the bootstrap technique.[16-18]

Definitions

Self-rated mental health

Self-rated mental health was measured by asking respondents, "In general, would you say your mental health is: excellent? very good? good? fair? poor?" The responses were dichotomized: fair/poor and good/very good/excellent. To calculate *mean self-rated mental health* scores, responses were assigned a numerical value, with higher scores indicating better mental health: 5 (excellent); 4 (very good); 3 (good); 2 (fair); and 1 (poor).

Mental morbidity measures

In this study, "mental morbidity measures" refers collectively to three types of measures: World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI)-measured disorders (one-month, 2- to 12-month or lifetime); self-reported disorders that had been diagnosed by a health professional; and non-specific psychological distress. The mental morbidities examined are: depression, bipolar I, panic disorder and social phobia; self-reports of a diagnosis by a health professional of dysthymia, psychosis, schizophrenia and obsessive-compulsive disorder; and the K6 measure of psychological distress (defined on next page).

Respondents were classified with mental morbidity if they met the criteria for at least one WMH-CIDI-measured disorder; self-reported a diagnosis of at least one mental disorder; and/or were classified as having high or moderate distress.

WMH-CIDI-measured disorders

The Canadian Community Health Survey measured several mental disorders using the WMH-CIDI, an instrument based on definitions in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV®-TR).[19] The WMH-CIDI was designed to measure the prevalence of mental disorders at the community level, and can be administered by lay interviewers. In this analysis, four categories were created for each disorder to identify respondents who met the criteria for the disorder in the past month, in the past 2 to 12 months, in their lifetime but not in the past 12 months, or never.

Respondents who met the criteria for *lifetime major depressive episode* reported:

1. two or more weeks of depressed mood or loss of interest or pleasure and at least five symptoms associated with depression, which represent a change in functioning;
2. that symptoms cause clinically significant distress or impairment in social, occupational or other important areas of functioning; and
3. that symptoms are not better accounted for by bereavement, or symptoms last more than two months, or symptoms are characterized by marked functional impairment, preoccupation with worthlessness, suicidal ideation, or psychomotor retardation.

Respondents who met the criteria for *major depressive episode in the month or 2 to 12 months before the interview* reported:

1. meeting the criteria for lifetime major depressive episode;
2. having a major depressive episode in the month or 2 to 12 months before the interview; and
3. clinically significant distress or impairment in social, occupational or other important areas of functioning.

In this analysis, *depression* excludes respondents who also met the criteria for lifetime manic episode.

For *bipolar I*, respondents who met the criteria for a *lifetime manic* episode reported:

1. a distinct period of abnormally and persistently elevated, expansive or irritable mood lasting at least one week;
2. three or more of seven symptoms (or four or more if mood is only irritable) during the mood disturbance—inflated self-esteem or grandiosity; decreased need for sleep, more talkative than usual; flight of ideas or racing thoughts; distractibility; increase in

goal-oriented activity or psychomotor agitation; and excessive involvement in pleasurable activities with high potential for painful consequences; and

3. marked impairment in normal daily activities, occupational functioning or usual social activities or relationships with others; or mood disturbance includes psychotic features; or mood disturbance severe enough to require hospitalization.

Respondents who met the criteria for a *manic episode* in the *month or 2 to 12 months before the interview* reported:

1. meeting the criteria for a lifetime manic episode;
2. having a manic episode in the month or 2 to 12 months before to the interview; and
3. clinically significant distress or impairment in social, occupational or other important areas of functioning.

Respondents who met the criteria for *lifetime panic disorder* reported:

1. four or more recurrent, unexpected panic attacks; and
2. at least one of the attacks had been followed by a month or more of worry about having additional attacks, worry about the consequences of the attacks, or changes in behaviour related to the attacks.

Respondents who met the criteria for *panic disorder in the month or 2 to 12 months before the interview* reported:

1. meeting the criteria for lifetime panic disorder;
2. having a panic attack in the month or 2 to 12 months before the interview; and
3. significant emotional distress during a panic attack in the month or 2 to 12 months before the interview.

Respondents who met the criteria for *lifetime social phobia* reported:

1. marked and persistent fear of one or more social or performance situations in which he/she is exposed to unfamiliar people or to possible scrutiny by others and fear of acting in a way (or show anxiety symptoms) that will be humiliating or embarrassing;
2. that exposure to the feared situation(s) almost invariably provoke(s) anxiety;
3. that they recognize their fear is excessive or unreasonable;
4. that the feared situation(s) is(are) avoided or endured with intense anxiety or distress;
5. significant interference with normal routine, occupational or academic functioning, or social activities or relationships; and
6. that they were aged 18 or older the last time they strongly feared or avoided a social or performance situation; or did not know their age the last time they strongly feared or avoided a social or performance situation and were aged 18 or older; or that they strongly feared or avoided a social or performance situation for longer than six months.

Respondents who met the criteria for *social phobia in the month or 2 to 12 months before the interview* reported:

1. meeting the criteria for lifetime social phobia;
2. fearing or avoiding social or performance situation(s) in the month or 2 to 12 months before the interview; and
3. clinically significant distress or impairment in social, occupational or other important areas of functioning.

Respondents who met the criteria for *lifetime agoraphobia* reported:

1. anxiety about being in places or situations from which escape might be difficult or embarrassing and feared having a panic attack; and
2. avoiding situations associated with agoraphobia; or endured situations with marked distress or anxiety; or required the presence of a companion in the situations.

Respondents who met the criteria for *agoraphobia in the month or 2 to 12 months before the interview* reported:

1. meeting the lifetime Canadian Community Health Survey 1.2/ WMH-CIDI criteria for agoraphobia; and
2. fearing or avoiding the agoraphobic situations in the month or 2 to 12 months before the interview.

Respondents who met the criteria for any one of depression, bipolar I, panic disorder, social phobia, or agoraphobia in the month before the interview were classified as having *any WMH-CIDI disorder in the past month*. Similar categories were created for having *any WMH-CIDI disorder in the past 2 to 12 months*, and *any lifetime WMH-CIDI disorder*.

Respondents who met the criteria for two or more of depression, bipolar I, panic disorder, social phobia or agoraphobia in the month before the interview were classified as having *multiple WMH-CIDI disorders in the past month*. Similar categories were created for having *multiple WMH-CIDI disorders in the past 2-12 months*, and *multiple lifetime, but not in the past 12 months WMH-CIDI disorders*.

Self-reported mental disorders

The presence of *self-reported mental disorders* was determined by asking respondents about disorders that had been diagnosed by a health professional and that had lasted or were expected to last six months or longer. Interviewers read a list of mental disorders that included dysthymia, schizophrenia, psychosis and post-traumatic stress disorder. Respondents who reported any one of these were considered to have *any self-reported mental disorder*; those who reported two or more were considered to have *multiple self-reported mental disorders*.

Psychological distress (K6)

Psychological distress is a non-specific negative state of mental health. The 6-item (K6) measure is based on a subset of items from the WMH-CIDI.[20] It has been found to be at least as sensitive as the corresponding 10-item (K10) measure in discriminating between cases and non-cases of serious mental illness, and is therefore used more often in national surveys. The psychological distress score can range from 0 to 24 and is based on questions about the frequency of feeling "nervous," "hopeless," "restless or fidgety," "so depressed that nothing could cheer you up," "everything was an effort," and/or "worthless" in the past month. Higher scores indicate greater

distress. Scores were categorized as: high (13 to 24), moderate (9 to 12) and no distress (0 to 8).

Co-variates

Four *age groups* were established for this analysis: 15 to 24, 25 to 44, 45 to 64, and 65 or older.

Marital status was categorized as: married or common-law; widowed, separated or divorced; and never married.

Respondents were grouped into five categories based on the *highest level of education*: less than secondary graduation; secondary graduation; some postsecondary; college or trades graduation; and university graduation.

Household income was based on total self-reported household income from all sources in the previous 12 months. The ratio between total household income and the low-income cut-off corresponding to the number of people in the household and to community size was calculated. The ratios were adjusted by dividing them by the highest ratio for all Canadian Community Health Survey respondents. The adjusted ratios were grouped into deciles (10 groups, each containing approximately one-tenth of Canadians), which were collapsed into quintiles: lowest (deciles 1 and 2), low-middle (3 and 4), middle (5 and 6), high-middle (7 and 8), and highest (9 and 10).

Immigrant status was based on citizenship by birth and immigration to Canada. Respondents who were not born Canadian citizens and identified a year of immigration were classified as immigrants.

Respondents were asked about physical conditions that had been diagnosed by a health professional and that had lasted or were expected to last six months or longer. Interviewers read a list of conditions. For this analysis, 18 *chronic conditions* were considered: asthma, arthritis or rheumatism, back problems, high blood pressure, migraine, chronic bronchitis, emphysema, diabetes, epilepsy, heart disease, cancer, ulcers, the effects of a stroke, bowel disorder, thyroid disorder, cataracts, glaucoma, and dementia.

Results

In 2002, an estimated 1.7 million Canadians aged 15 or older (7%) rated their mental health as fair or poor; 2.0 million (8%) met the criteria for a WMH-CIDI-measured disorder; 496,000 (2%) reported having been diagnosed with a mental disorder; and 579,000 (2%) were classified with high distress and 1.3 million (5%) with moderate distress (Table 1).

Socio-demographic factors

The sex distribution of mental morbidity was consistent across most mental morbidity measures and SRMH. Women were more likely than men to report fair/poor SRMH, to meet the criteria for all WMH-CIDI-measured mental morbidities except bipolar I disorder (no significant differences) (Appendix Table A) and to self-report all mental morbidities except schizophrenia

Table 1
Number and percentage with fair/poor self-rated mental health, WMH-CIDI-measured disorder, self-reported diagnosed mental disorder and psychological distress, by selected characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Fair/Poor self-rated mental health		WMH-CIDI-measured disorder (past 12 months)		Self-reported diagnosed mental disorder		Psychological distress			
							High		Moderate	
Characteristics	'000	%	'000	%	'000	%	'000	%	'000	%
Total	**1,715.2**	**6.9**	**2,037.0**	**8.4**	**496.0**	**2.0**	**579.2**	**2.3**	**1,305.1**	**5.2**
Sex										
Male†	742.5	6.0	758.9	6.3	207.3	1.7	244.4	2.0	576.9	4.7
Female	972.7	7.7*	1,278.0	10.4*	288.7	2.3*	334.8	2.6*	728.3	5.8*
Age group										
15 to 24†	255.3	6.2	474.4	11.6	58.8	1.4	97.4	2.4	310.1	7.5
25 to 44	654.1	6.9	882.4	9.5*	210.6	2.2*	239.2	2.5	485.6	5.1*
45 to 64	564.1	7.4*	563.9	7.6*	184.6	2.4*	185.1	2.4	361.2	4.8*
65 or older	241.7	6.5	116.3	3.3*	42.0	1.1	57.6	1.6*	148.2	4.0*
Marital status										
Married/Common-law†	827.7	5.4	952.2	6.4	225.9	1.5	275.9	1.8	624.1	4.1
Widowed/Separated/Divorced	394.4	12.3*	360.2	11.7*	104.0	3.3*	121.3	3.8*	223.1	7.0*
Never married	490.2	7.7*	722.5	11.6*	166.1	2.6*	182.0	2.9*	456.8	7.2*
Education										
Less than secondary graduation†	566.0	9.0	542.4	8.9	125.8	2.0	205.4	3.3	426.9	6.8
Secondary graduation	321.9	6.9*	389.7	8.5	76.9	1.6	115.7	2.5*	236.3	5.1*
Some postsecondary	148.5	7.1*	216.6	10.7*	55.6	2.7	53.8	2.6	125.6	6.1
College/Trades graduation	424.2	6.3*	541.2	8.3	138.7	2.1	131.7	2.0*	317.9	4.8*
University graduation	230.8	4.6*	331.2	6.9*	98.3	2.0	66.0	1.3*	188.3	3.8*
Household income quintile										
Lowest†	529.0	11.7	483.3	11.0	156.6	3.5	216.9	4.8	388.7	8.6
Low-middle	343.0	7.6*	384.6	8.8*	89.4	2.0*	112.9	2.5*	248.9	5.5*
Middle	269.4	5.9*	346.3	7.7*	84.2	1.8*	91.7	2.0*	176.9	3.9*
High-middle	248.5	5.6*	341.1	7.8*	67.8	1.5*	47.3‡	1.1*‡	194.9	4.4*
Highest	143.5	3.2*	291.0	6.7*	57.7	1.3*	45.3‡	1.0*‡	129.8	2.9*
Immigrant										
Yes	327.4	6.0*	307.2	5.7*	65.0	1.2*	103.6	1.9	283.5	5.2
No†	1,360.0	7.0	1,711.1	9.1	422.9	2.2	459.6	2.4	1,002.6	5.2
Chronic condition										
Yes	1,322.0	9.6*	1,375.6	10.4*	397.4	2.9*	469.7	3.4*	877.8	6.4*
No†	356.7	3.5	573.9	5.7	95.4	0.9	95.7	0.9	369.4	3.6

† reference category
* significantly different from estimate for reference category ($p<0.05$)
‡ coefficient of variation 16.6% to 33.3% (use with caution)
Source: 2002 Canadian Community Health Survey: Mental Health and Well-being

(no significant differences) (Appendix Table B).

The age distribution of SRMH and mental morbidity differed depending on the measure. The prevalence of fair/poor SRMH was relatively constant across age groups—only 45- to 64-years-olds were more likely to report fair/poor SRMH than those in the youngest age group. The prevalence of WMH-CIDI-measured disorders decreased with advancing age. Similarly, people in the youngest age group were more likely than those in older age groups to report high psychological distress. The middle age groups were more likely than the youngest age group to report diagnosed mental disorders.

An income gradient was evident, with individuals in the lowest quintile more likely to rate their mental health as fair/poor than were those in higher quintiles. The gradient was similar for education, with individuals who had less than secondary graduation being more likely than those with higher levels of education to report fair/poor mental health. For WHM-CIDI-measured disorders, self-reported diagnosed mental disorders and psychological distress prevalence was also generally lower among higher-income groups. A similar pattern with education was present for psychological distress.

Mental morbidity measures

On average, those with a mental morbidity had lower SRMH scores than those without a morbidity (Table 3). A gradient in mean SRMH scores was apparent among those with a WMH-CIDI-measured disorder in the past month, compared with those with a disorder in the past 2 to 12 months, those with a history of the disorder (lifetime episode, but not in past 12 months), and those who had never experienced an episode.

The prevalence of fair/poor SRMH varied by individual mental morbidity measure and the timeframe of episode (Table 2). For WMH-CIDI-measured disorders, the prevalence of fair/poor SRMH ranged from almost 10% of

Table 2
Prevalence of fair/poor self-rated mental health, by mental morbidity measures, and odds ratios relating mental morbidity measures to fair/poor self-rated mental health, population aged 15 or older, Canada excluding territories, 2002

Mental morbidity measures	Prevalence of fair/poor self-rated mental health (%)	Model 1 (unadjusted) Odds ratio	95% confidence interval from	to	Model 2 (adjusted)[2] Odds ratio	95% confidence interval from	to
WMH-CIDI-measured disorder							
Any							
Past month	45.0[3]	12.4*	10.1	15.1	11.2*	9.1	13.9
Past 2 to 12 months	27.4[3]	6.6*	5.5	8.0	6.3*	5.2	7.7
Lifetime, not past 12 months	10.1[3]	2.5*	2.1	2.9	2.4*	2.0	2.8
Never†	3.5[3]	1.0	..	..	1.0	..	..
Depression							
Past month	58.1[3]	26.0*	19.5	34.5	22.4*	16.5	30.4
Past 2 to 12 months	32.7[3]	9.1*	7.4	11.2	8.1*	6.5	10.1
Lifetime, not past 12 months	9.7[3]	2.0*	1.7	2.4	1.9*	1.5	2.3
Never†	5.1[3]	1.0	..	..	1.0	..	..
Bipolar I							
Past month	51.9*	16.3*	10.0	26.5	13.1*	7.4	23.2
Past 2 to 12 months	39.0*	9.7*	6.9	13.6	7.4*	5.1	10.7
Lifetime, not past 12 months	22.3[3]	4.3*	3.2	5.8	3.4*	2.5	4.7
Never†	6.2[3]	1.0	..	..	1.0	..	..
Panic disorder							
Past month	49.0*	14.9*	10.7	20.8	11.4*	7.8	16.7
Past 2 to 12 months	32.9[3]*	7.6*	3.5	16.6	6.2*	2.8	13.9
Lifetime, not past 12 months	14.4*	2.6*	1.9	3.5	2.4*	1.8	3.2
Never†	6.0[3]	1.0	..	..	1.0	..	..
Social phobia							
Past month	45.2[3]	14.9*	11.6	19.0	13.7*	10.7	17.5
Past 2 to 12 months	30.9[3]	8.1*	6.2	10.5	7.6*	5.7	10.2
Lifetime, not past 12 months	16.0[3]	3.4*	2.8	4.2	3.4*	2.8	4.2
Never†	5.3[3]	1.0	..	..	1.0	..	..
Agoraphobia							
Past month	34.5[3]*	7.5*	4.4	12.9	5.5*	2.9	10.6
Past 2 to 12 months	31.3[3]*	6.5*	3.3	12.9	4.7*	2.3	9.9
Lifetime, not past 12 months	16.7[3]*	2.8*	1.7	4.8	2.8*	1.7	4.8
Never†	6.6[3]	1.0	..	..	1.0	..	..
Multiple							
Past month	73.4[3]	46.2*	30.2	70.7	37.3*	22.9	60.8
Past 2 to 12 months	38.5[3]	8.4*	6.0	11.8	6.8*	4.7	9.7
Lifetime, not past 12 months	15.2[3]	2.7*	2.0	3.6	2.6*	2.0	3.5
Never†	5.7[3]	1.0	..	..	1.0	..	..
Self-reported diagnosed mental disorder							
Any							
Yes	46.2*	13.4*	11.1	16.1	10.2*	8.4	12.6
No†	6.0	1.0	..	..	1.0	..	..
Dysthymia							
Yes	45.7*	11.7*	7.5	18.0	11.3*	6.8	18.7
No†	6.7	1.0	..	..	1.0	..	..
Schizophrenia							
Yes	53.5*	15.9*	8.7	29.1	11.5*	6.3	21.1
No†	6.7	1.0	..	..	1.0	..	..
Psychosis							
Yes	54.2*	16.9*	13.0	22.1	12.7*	9.5	17.1
No†	6.5	1.0	..	..	1.0	..	..
Post-traumatic stress disorder							
Yes	46.0*	12.3*	9.6	15.8	8.8*	6.7	11.7
No†	6.5	1.0	..	..	1.0	..	..
Multiple							
Yes	69.4*	31.7*	20.9	48.0	23.0*	14.5	36.4
No†	6.7	1.0	..	..	1.0	..	..
K6 - Psychological distress							
High (score 13 to 24)	61.2[3]	36.4*	30.0	44.1	28.2*	22.9	34.7
Moderate (score 9 to 12)	30.2[3]	10.0*	8.4	11.7	8.4*	7.1	10.0
None (score 0 to 8)†	4.2[3]	1.0	..	..	1.0	..	..

† reference category
* significantly different from estimate for reference category ($p<0.05$)
‡ models adjusted for socio-demographic and physical health characteristics; see Appendix Tables C, D and E
§ significantly different from values in all other categories ($p<0.05$), p-value adjusted for simultaneous comparisons
‖ coefficient of variation between 16.6% and 33.3% (interpret with caution)
.. not applicable

Source: 2002 Canadian Community Health Survey: Mental Health and Well-being

those meeting the criteria for lifetime depression, but not in the past 12 months to 58% for past-month depression. The prevalence of fair/poor SRMH was highest among those with a past month episode, lower among those with an episode in the past 2 to 12 months, still lower for those with an episode at some other time in their life, and lowest for those who had never had an episode.

Among people who reported that they had been diagnosed with a mental disorder, the overall prevalence of fair/poor SRMH was 46%, compared with 6% among those not reporting a mental disorder. The prevalence of fair/poor SRMH ranged from 46% among those reporting a diagnosis of dysthymia or post-traumatic stress disorder to 54% among those reporting a diagnosis of psychosis or schizophrenia. The highest prevalence of fair/poor SRMH (69%) was among people reporting multiple diagnoses of mental disorders.

Fully 61% of people with high distress reported fair/poor mental health, compared with 30% of those with moderate distress, and 4% of those with no distress.

People with a WMH-CIDI-measured disorder, a diagnosed mental disorder or moderate/high psychological distress had higher odds of reporting fair/poor mental health than did those without such mental morbidities (Table 2). The odds ratios were attenuated slightly in the models controlling for socio-demographic characteristics and the presence of chronic physical conditions, but the relationships persisted (Appendix Tables C, D, E).

Among all mental morbidity measures examined in this study, between 27% (multiple WMH-CIDI disorders in the past month) and 70% (moderate distress) of respondents classified with mental morbidity did not perceive their mental health as fair or poor (Table 2). In addition, 4% of respondents without any lifetime disorder, 6% of respondents without any self-reported disorder, and 4% of respondents without high distress perceived their health as fair or poor (Table 2).

Discussion

Socio-demographic distribution

Women were more likely than men to rate their mental health as fair/poor and to be classified with mental morbidity, corresponding to the general finding that women have a higher prevalence of most mental disorders and tend to report worse health than do men.[21] It is not clear if this is because of differences in objective health status stemming from biological or gender-based factors, or because of non-random differences, such as using different frames of reference and sources for comparison when assessing one's health.[21]

The age patterns for SRMH differ from those for some of the other measures of mental morbidity. The prevalence of WMH-CIDI-measured disorders decreases with age, while the prevalence of SRMH does not. These results are not entirely consistent with earlier research showing that the prevalence of anxiety and anger declines at successively older ages, while depression follows a U-shaped pattern, with younger and older adults having higher levels than middle-aged people.[22] The absence of a U-shaped pattern for depression in the current study may stem from the use of the WMH-CIDI depression module rather than the CES-D, or from the categorization of age into large groups. The discrepancy in the age pattern of SRMH compared with the age pattern of other mental health measures in these analyses may be because of biases introduced by WMH-CIDI measures; because SRMH is capturing something different than the other measures; or because different age groups use different frames of reference and sources of comparison when responding to the question. The WMH-CIDI depression module in the Canadian Community Health Survey has been validated with only clinical samples, not community-based samples for which it was designed.[23] The module may misclassify depression differentially by age.

The contradictory age pattern may also indicate that SRMH is capturing something beyond the presence of mental disorder or high distress, and that other factors that change with age are associated with self-rating of mental health. Ross and Mirowsky[22] suggest that although positive emotions (for example, satisfaction with life) increase, and negative emotions (for example, worry, anxiety, anger) decrease with age, the decrease in individuals' sense of power (as a result of physical decline, loss of job and loved ones, limited opportunities for the future, and a sense of having few years left to live) may contribute to a decline in mental health with age.

The age pattern of fair/poor SRMH may also result from different frames of reference and sources of comparison used by people of different ages. Respondents apply complex and multi-layered criteria when they rate their general health,[3] and different age groups use different referents. No work has determined, however, if referents for self-rated *mental* health also differ by age group.[2] Nor has research examined respondents' sources of comparison for their mental health. It is not known whether people compare their current mental health status with their mental health status when younger, with the mental health status of others in their age groups, families, or communities, or if these sources differ by age.

The results of the current study indicate a socio-economic gradient, with individuals in the lowest income and education quintiles most likely to report fair/poor mental health. This supports the findings of earlier studies that used several mental moribidity measures, including poor psychosocial health,[24] distress,[25,26] depression,[27,28] schizophrenia,[28] panic, phobias and generalized anxiety disorder.[28]

The results are also similar to those for self-reported *general* health. Most research examining socio-economic differences in self-rated health in Canada, the United States and Europe find that a relatively high percentage of people of lower socio-economic status report fair/poor health,[29-32] although in some developing countries, the gradients

Table 3
Mean and percentage distribution of self-rated mental health scores, by mental morbidity measures, household population aged 15 or older, Canada excluding territories, 2002

	Self-rated mental health score													
	Mean score			Percentage distribution										
		95% confidence interval		1 (Poor)		2 (Fair)		3 (Good)		4 (Very good)		5 (Excellent)	
Mental morbidity measures	Mean	from	to	'000	%	'000	%	'000	%	'000	%	'000	%
WMH-CIDI-measured disorder													
Any													
Past month	2.7*	2.6	2.7	132.6	16.4*	232.5	28.8*	268.7	33.3*	130.4	16.2*	43.0	5.3[E]*
Past 2 to 12 months	3.1*	3.0	3.2	57.3	5.3*	240.6	22.2*	419.7	38.7*	271.2	25.0*	96.2	8.9*
Lifetime, not past 12 months	3.7*	3.6	3.7	30.5	1.0[E]*	266.8	9.1*	941.2	31.9*	1,168.7	39.7	540.1	18.3*
Never†	4.0	4.0	4.0	55.5	0.3	629.5	3.2	4,645.1	23.9	7,972.0	41.1	6,102.9	31.5
Depression													
Past month	2.3*	2.1	2.4	81.5	26.1*	102.0	32.7*	94.6	30.3	24.9	8.0[E]*	F	F
Past 2 to 12 months	3.0*	2.9	3.1	45.1	7.0*	166.4	25.7*	243.8	37.7*	144.6	22.3*	47.6	7.3*
Lifetime, not past 12 months	3.6*	3.6	3.7	21.9	1.3[E]*	142.3	8.4*	563.2	33.2*	653.0	38.5	317.0	18.7*
Never†	3.9	3.9	4.0	133.0	0.6	990.5	4.5	5,546.1	25.1	8,915.8	40.3	6,544.0	29.6
Bipolar I													
Past month	2.5*	2.3	2.8	14.4	16.3[E]*	31.5	35.6*	24.3	27.5[E]	16.0	18.2[E]*	F	F
Past 2 to 12 months	2.8*	2.7	3.0	20.6	14.1[E]*	36.4	24.9*	45.9	31.4	32.6	22.3*	10.6	7.3[E]*
Lifetime, not past 12 months	3.3*	3.1	3.4	15.5	4.5[E]*	61.5	17.9*	115.9	33.7*	119.5	34.8	31.3	9.1[E]*
Never†	3.9	3.9	3.9	231.8	1.0	1,276.8	5.3	6,288.9	25.9	9,597.4	39.5	6,893.5	28.4
Panic disorder													
Past month	2.5*	2.3	2.7	38.8	23.0*	43.6	25.9*	50.8	30.2	28.0	16.6[E]*	F	F
Past 2 to 12 months	3.1*	2.6	3.5	F	F	F	F	8.3	25.3[E]	F	F	F	F
Lifetime, not past 12 months	3.6*	3.5	3.7	7.5	1.4[E]	67.8	12.9*	152.0	28.9	212.6	40.5	85.3	16.2*
Never†	3.9	3.9	3.9	206.7	0.9	1,217.0	5.2	6,078.7	25.8	9,356.1	39.7	6,720.4	28.5
Social phobia													
Past month	2.7*	2.5	2.8	50.0	15.1*	99.8	30.1*	108.0	32.6*	53.1	16.0*	F	F
Past 2 to 12 months	3.0*	2.9	3.1	39.8	9.6[E]*	88.2	21.4*	157.0	38.0*	90.3	21.8*	38.1	9.2*
Lifetime, not past 12 months	3.5*	3.4	3.6	20.1	1.7[E]*	168.5	14.3*	381.5	32.3*	441.2	37.4	169.7	14.4*
Never†	3.9	3.9	3.9	169.2	0.7	1,030.6	4.5	5,784.0	25.3	9,160.2	40.1	6,693.6	29.3
Agoraphobia													
Past month	2.9*	2.6	3.2	7.1	10.7[E]*	15.7	23.8[E]*	23.3	35.4[E]	14.3	21.7[E]*	F	F
Past 2 to 12 months	2.9*	2.7	3.1	F	F	25.7	25.4[E]*	45.4	44.8*	20.9	20.7[E]*	F	F
Lifetime, not past 12 months	3.6*	3.4	3.8	F	F	28.1	16.2[E]*	36.5	21.1	76.7	44.3	31.2	18.0[E]*
Never†	3.9	3.9	3.9	272.9	1.1	1,342.0	5.5	6,368.1	26.0	9,661.0	39.4	6,894.1	28.1
Multiple													
Past month	2.0*	1.8	2.1	44.2	34.5*	49.7	38.9*	26.8	21.0[E]	F	F	F	F
Past 2 to 12 months	2.8*	2.7	3.0	15.3	8.9[E]*	50.8	29.6*	64.5	37.6*	33.8	19.7[E]*	F	F
Lifetime, not past 12 months	3.5*	3.4	3.6	F	F	75.0	13.9*	175.5	32.4*	214.4	39.7	68.9	12.7*
Never†	3.9	3.9	3.9	192.1	0.8	1,172.1	4.9	6,115.7	25.7	9,459.9	39.8	6,834.8	28.8
Self-reported diagnosed mental disorder													
Any													
Yes	2.7*	2.6	2.8	73.1	14.7*	156.1	31.5*	161.1	32.5*	68.2	13.8*	37.4	7.6[E]*
No†	3.9	3.9	3.9	216.0	0.9	1,263.7	5.2	6,348.1	25.9	9,734.7	39.8	6,907.7	28.2
Dysthymia													
Yes	2.7*	2.5	3.0	10.2	12.2[E]*	28.0	33.5*	25.9	31.0[E]	14.9	17.9[E]*	F	F
No†	3.9	3.9	3.9	280.1	1.1	1,394.6	5.6	6,488.9	26.1	9,788.9	39.3	6,941.7	27.9
Schizophrenia													
Yes	2.6*	2.2	2.9	12.1	19.2[E]*	21.7	34.4[E]*	17.3	27.5[E]	F	F	F	F
No†	3.9	3.9	3.9	278.4	1.1	1,401.9	5.6	6,496.4	26.1	9,797.5	39.3	6,940.5	27.9
Psychosis													
Yes	2.5*	2.3	2.6	36.8	21.7*	55.2	32.5*	48.9	28.8	20.0	11.8[E]*	F	F
No†	3.9	3.9	3.9	252.9	1.0	1,366.0	5.5	6,464.9	26.1	9,784.3	39.4	6,937.7	28.0
Post-traumatic stress disorder													
Yes	2.7*	2.5	2.8	41.2	16.3*	75.3	29.7*	83.1	32.8*	33.0	13.0*	20.8	8.2[E]*
No†	3.9	3.9	3.9	248.7	1.0	1,347.0	5.5	6,427.9	26.0	9,771.0	39.5	6,924.9	28.0
Multiple													
Yes	2.1*	1.9	2.3	23.7	36.6*	21.3	33.0*	12.2	18.8[E]	5.7	8.8[E]*	F	F
No†	3.9	3.9	3.9	265.2	1.1	1,397.2	5.6	6,496.5	26.1	9,797.2	39.4	6,943.4	27.9
K-6 psychological distress													
High (score 13 to 24)	2.3*	2.2	2.4	144.0	24.9*	210.7	36.4*	158.5	27.4	48.0	8.3*	17.8	3.1[E]*
Moderate (score 9 to 12)	3.0*	2.9	3.1	67.1	5.2[E]*	326.6	25.0*	533.5	40.9*	271.5	20.8*	105.5	8.1*
None (score 0 to 8)†	4.0	3.9	4.0	78.5	0.3	879.9	3.8	5,786.0	25.1	9,466.9	41.1	6,809.1	29.6

† reference category
* significantly different from reference category ($p<0.05$)
E coefficient of variation 16.6% to 33.3% (use with caution)
F coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability)
Source: 2002 Canadian Community Health Survey: Mental Health and Well-being.

are reversed.[33] Research has yet to examine SRMH in relation to clinically tested or observed mental health status, so it is not known if the correspondence of self-reporting of mental health status to tested or observed health status differs by socio-economic status.

Variation in SRMH by recency and morbidity measure

Since the SRMH measure implies the current situation, the gradients in the odds of reporting fair/poor mental health and in mean scores by recency of episode may indicate successful treatment and/or recovery in respondents with a lifetime disorder but no episode in the past 12 months.

Variations in the prevalence of fair/poor SRMH by individual mental morbidity measures may reflect differences in the burden of illness or stigma[34] associated with each mental morbidity.[28,35] The high prevalence of fair/poor SRMH among those reporting a diagnosis of schizophrenia corresponds to its characterization as the "most severe and debilitating mental illness....characterized by delusions, hallucinations, disorganized behavior, negative symptoms (e.g., flat affect), and social/occupational dysfunction."[28] Because of the burden of the disorder, the stigma associated with it, or a combination of both, respondents reporting schizophrenia may be more likely to report fair/poor mental health than respondents reporting or meeting the criteria for other disorders.

The high prevalence of fair/poor SRMH among respondents reporting multiple diagnoses of mental disorders is consistent with the association between comorbidity and more severe psychiatric symptoms, more functional disability,[36] longer illness duration, less social competence, and greater use of services.[37]

The association of moderate and high distress with fair/poor SRMH is consistent with the design of the K6 measure to capture a non-specific negative state of mental health based on a subset of items from the Composite International Diagnostic Interview (CIDI), and the finding of a similar association by Fleishman and Zuvekas[13] using data from the US Medical Expenditure Panel Survey.

The persistence of all significant associations between fair/poor SRMH and mental morbidities in the multivariate models indicates that the associations are robust and independent of socio-demographic factors and the presence of chronic physical conditions.

Lack of correspondence with mental morbidity measures

The sizeable percentage of respondents classified with mental morbidity who did not perceive their mental health as fair or poor may be due to misclassification, lower severity of symptoms, lack of recency of symptoms, lower burden of morbidity, lack of insight into morbidity, successful treatment, or recovery. The SRMH measure may thereby underestimate the prevalence of mental morbidity, the size of this underestimate varying by morbidity. This limits the value of SRMH as a mental health measure for some uses such as investigating the etiology of mental morbidities or predicting the need for treatment of morbidities.

The small percentage of respondents classified *without* mental morbidity who perceived their mental health as fair/poor suggests that SRMH may be capturing subthreshold symptoms, and/or that factors other than mental morbidities influence self-perceptions of mental health. Although SRMH does not directly correspond with measured (or diagnosed) mental morbidities, perceptions are important in their own right. For example, they play an important role in treatment-seeking.[8]

Limitations

Previous versions of the Composite International Diagnostic Interview have been validated, but the World Mental Health version used in the Canadian Community Health Survey: Mental Health and Well-being has not. Therefore, it is not known to what extent clinical assessments made by health care professionals would agree with classifications based on these survey data.

Because the Canadian Community Health Survey did not have modules for some relatively common mental disorders (for example, generalized anxiety disorder), their association with self-rated mental health could not be assessed. Other mental disorders (dysthymia, schizophrenia, obsessive-compulsive disorder, psychosis) are only

What is already known on this subject?

- Increasingly, population health surveys are using a single-item ordinal question on self-rated mental health, but little is known about its association with measures of mental morbidity.
- Research suggests that self-rated mental health is associated with other mental morbidity measures, including non-specific psychological distress, depressive symptoms, activity limitations and physical and emotional role functioning, but is not a replacement for them.

What does this study add?

- Associations between self-rated mental health and a comprehensive array of mental morbidity measures were strong and consistent, with gradients in mean self-rated mental health scores and odds of reporting fair/poor mental health by recency of WMH-CIDI-measured mental disorders.
- A sizeable percentage of respondents classified with mental morbidity did not perceive their mental health as fair/poor.
- Careful consideration should be given to the strengths and limitations of self-rated mental health in survey analysis.

measured with self-reported diagnoses, for which the impact of reporting error is unknown. Respondents may have undiagnosed mental disorders that were not captured in the questions, or they may not have reported diagnoses because of stigma, recall bias or other factors. This could have resulted in some respondents with mental disorders not being identified, thereby leading to an underestimate of the association between self-reported mental disorders and SRMH.

Because of the cross-sectional design of this study, the temporal ordering of events cannot be inferred. It is not clear if fair/poor SRMH predicts mental morbidities, or if the presence of mental morbidities results in a self-rating of fair/poor.

The reference periods used for the mental morbidity measures varied: for SRMH, an unspecified reference period implying the present; for WMH-CIDI disorders, the past month, the past 12 months, or lifetime; for self-reported mental morbidities, disorders that had lasted or were expected to last 6 months or more; and for psychological distress, the past month. This may have resulted in underestimates of the associations between mental morbidity measures and SRMH when mental morbidity was not current. Nonetheless, this analysis reveals significant associations between all mental morbidity measures and fair/poor SRMH, demonstrating the strength of the relationship regardless of the reference period.

Conclusion

This is the first nationally representative study to examine associations between SRMH and selected measures of mental morbidity in the Canadian population. It supports previous research demonstrating that SRMH is associated with a range of mental health measures. The wide range of mental morbidity measures assessed, the large population-based survey, and the multivariate approach add strength to this analysis.

There were strong positive associations between all mental morbidity measures and SRMH, with stronger associations between past month prevalence and SRMH than past 2- to 12-month prevalence and SRMH, which, in turn, had stronger associations with SRMH than lifetime, but not past-12-month, disorder. On the other hand, for every mental morbidity measure, a sizeable percentage of respondents who did not perceive their mental health as fair or poor. Uncovering the reasons for this requires further investigation.

For specific morbidities, SRMH cannot be used to monitor trends, investigate etiology, predict the need for treatment, or determine if those who need treatment are receiving it. However, the strong and consistent association with a wide range of mental morbidity measures make it a potentially useful indicator for monitoring general mental health. In addition, SRMH captures individuals' perceptions of their mental health, which have implications for service use and treatment compliance.

SRMH is the only national-level mental health measure available from ongoing Statistics Canada health surveys. By contributing to understanding what SRMH represents, this study informs the use of this measure in ongoing surveys and as a health indicator. ■

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Appendix

Table A
Number and percentage classified with WMH-CIDI-measured disorder in past 12 months, by type of disorder and selected characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Any		Depression		Bipolar I		Panic disorder		Social phobia		Agoraphobia		Multiple	
Characteristics	**'000**	**%**	**'000**	**%**	**'000**	**%**	**'000**	**%**	**'000**	**%**	**'000**	**%**	**'000**	**%**
Total	**2,037.0**	**8.4**	**981.1**	**4.0**	**239.4**	**1.0**	**376.0**	**1.5**	**746.1**	**3.0**	**183.4**	**0.7**	**399.5**	**1.6**
Sex														
Male†	758.9	6.3	355.6	2.9	116.8	1.0	125.4	1.0	313.5	2.6	44.2	0.4	164.0	1.3
Female	1,278.0	10.4*	625.5	5.0*	122.6	1.0	250.5	2.0*	432.6	3.4*	139.2	1.1*	235.5	1.9*
Age group														
15 to 24†	474.4	11.6	210.5	5.1	72.8	1.8	73.5	1.8	193.3	4.7	33.6	0.8	89.1	2.2
25 to 44	882.4	9.5*	407.6	4.3	114.3	1.2*	180.5	1.9	329.1	3.5*	85.0	0.9	194.5	2.1
45 to 64	563.9	7.6*	292.7	3.9*	51.9	0.7*	107.1	1.4	191.2	2.5*	50.9‡	0.7‡	102.8	1.4*
65 or older	116.3	3.3*	70.3	1.9*	F	F	14.8‡	0.4*‡	32.5‡	0.9*‡	13.9‡	0.4*‡	F	F
Marital status														
Married/Common-law†	952.2	6.4	435.7	2.8	101.3	0.7	193.2	1.3	348.9	2.3	78.3	0.5	171.7	1.1
Widowed/Separated/Divorced	360.2	11.7*	207.7	6.5*	38.7	1.2*	61.7	2.0*	99.3	3.1*	49.0‡	1.5*‡	75.3	2.4*
Never married	722.5	11.6*	336.6	5.3*	99.4	1.6*	121.1	1.9*	296.9	4.7*	56.2	0.9*	152.4	2.4*
Education														
Less than secondary graduation†	542.4	8.9	237.5	3.8	82.5	1.3	86.6	1.4	213.6	3.4	61.0‡	1.0‡	115.3	1.8
Secondary graduation	389.7	8.5	185.2	4.0	40.8	0.9*	95.6	2.1*	138.1	3.0	31.3‡	0.7‡	81.2	1.7
Some postsecondary	216.6	10.7*	101.2	4.9	29.5	1.4	40.8	2.0	78.9	3.8	27.1‡	1.3‡	42.7	2.1
College/Trades graduation	541.2	8.3	255.0	3.8	63.1	0.9	103.7	1.6	199.1	3.0	38.6‡	0.6‡	101.0	1.5
University graduation	331.2	6.9*	192.0	3.9	19.1‡	0.4*‡	48.9	1.0	114.1	2.3*	25.3‡	0.5*‡	57.9	1.2*
Household income quintile														
Lowest†	483.3	11.0	233.2	5.2	62.3	1.4	103.6	2.3	166.1	3.7	63.9‡	1.4‡	113.7	2.5
Low-middle	384.6	8.8*	185.9	4.1*	51.0	1.1	65.6	1.5*	143.8	3.2	31.3‡	0.7*‡	69.6	1.6*
Middle	346.3	7.7*	156.6	3.4*	43.5‡	1.0*	70.5	1.6*	119.1	2.6*	30.5‡	0.7*‡	60.0	1.3*
High-middle	341.1	7.8*	168.9	3.8*	32.7‡	0.7*‡	57.9	1.3*	137.3	3.1	24.5‡	0.6*‡	71.0‡	1.6*‡
Highest	291.0	6.7*	127.7	2.9*	25.4‡	0.6*‡	60.3	1.4*	114.3	2.6*	20.9‡	0.5*‡	48.6	1.1*
Immigrant status														
Yes	307.2	5.7*	167.2	3.1*	34.6‡	0.6*‡	43.8‡	0.8*‡	96.8	1.8*	39.3‡	0.7‡	65.5‡	1.2*‡
No†	1,711.1	9.1	806.0	4.2	198.6	1.0	330.7	1.7	641.2	3.3	143.7	0.8	329.0	1.7
Chronic condition														
Yes	1,375.6	10.4*	674.3	4.9*	178.4	1.3*	278.9	2.1*	480.4	3.5*	126.3	0.9*	294.4	2.2*
No†	573.9	5.7	269.5	2.6	54.2	0.5	87.4	0.9	223.7	2.2	55.6‡	0.5‡	95.4	0.9

† reference category
* significantly different from estimate for reference category ($p<0.05$)
‡ coefficient of variation 16.6% to 33.3% (use with caution)
F coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability)
Source: 2002 Canadian Community Health Survey: Mental Health and Well-being.

Table B
Number and percentage with self-reported diagnosed mental disorder, by selected characteristics, household population aged 15 or older, Canada excluding the territories, 2002

	Any		Dysthymia		Schizophrenia		Psychosis		Post-traumatic stress disorder		Multiple	
	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%
Total	496.0	2.0	83.5	0.3	63.2	0.3	169.9	0.7	253.4	1.0	64.8	0.3
Sex												
Male†	207.3	1.7	30.2‡	0.3‡	38.3‡	0.3‡	65.9	0.5	106.1	0.9	29.1	0.2
Female	288.7	2.3*	53.4‡	0.4*‡	24.9‡	0.2‡	104.0	0.8*	147.3	1.2*	35.7	0.3
Age group												
15 to 24†	58.8	1.4	F	F	F	F	29.9‡	0.7‡	24.1‡	0.6‡	6.5‡	0.2‡
25 to 44	210.6	2.2*	36.7	0.4‡	36.2‡	0.4‡	68.6	0.7	106.3	1.1*	31.3	0.3*
45 to 64	184.6	2.4*	33.2	0.4‡	15.9‡	0.2‡	61.2	0.8	100.9	1.3*	23.6‡	0.3*
65 or older	42.0	1.1	7.1‡	0.2‡	F	F	10.1‡	0.3*‡	22.2‡	0.6‡	F	F
Marital status												
Married/Common-law†	225.9	1.5	35.1‡	0.2‡	18.0‡	0.1‡	72.6	0.5	126.7	0.8	23.1‡	0.2‡
Widowed/Separated/Divorced	104.0	3.3*	19.2‡	0.6*‡	8.2‡	0.3*‡	33.5	1.0*	66.0	2.1*	20.5‡	0.6*‡
Never married	166.1	2.6*	29.2‡	0.5*‡	37.0‡	0.6*‡	63.8	1.0*	60.7	1.0	21.2‡	0.3*‡
Education												
Less than secondary graduation†	125.8	2.0	16.3‡	0.3‡	21.4	0.3‡	41.8	0.7	68.2	1.1	20.0‡	0.3‡
Secondary graduation	76.9	1.6	6.4‡	0.1‡	F	F	30.0‡	0.6‡	34.5	0.7*	F	0.1*‡
Some postsecondary	55.6	2.7	7.7‡	0.4‡	F	F	20.3‡	1.0‡	30.3‡	1.5‡	F	F
College/Trades graduation	138.7	2.1	25.0	0.4‡	9.1‡	0.1*‡	48.6	0.7	77.0	1.2	17.3	0.3‡
University graduation	98.3	2.0	28.2	0.6‡	F	F	28.9	0.6	43.4	0.9	12.2‡	0.3‡
Household income quintile												
Lowest†	156.6	3.5	19.0‡	0.4‡	28.1	0.6	60.6	1.3	77.2	1.7	24.4	0.5
Low-middle	89.4	2.0*	14.2‡	0.3‡	F	F	32.9‡	0.7*‡	48.8	1.1*	11.8‡	0.3*‡
Middle	84.2	1.8*	16.3‡	0.4‡	F	F	24.8‡	0.5*‡	44.1‡	1.0*‡	F	F
High-middle	67.8	1.5*	F	F	F	F	20.0‡	0.5*‡	38.0	0.9*	9.7‡	0.2*‡
Highest	57.7	1.3*	F	F	F	F	20.0‡	0.5*‡	27.1‡	0.6*‡	6.8‡	0.2*‡
Immigrant												
Yes	65.0	1.2*	11.7‡	0.2‡	F	F	15.7‡	0.3*‡	38.7	0.7*	F	F
No†	422.9	2.2	68.1	0.4	57.1	0.3	152.7	0.8	211.4	1.1	57.2	0.3
Chronic condition												
Yes	397.4	2.9*	61.9	0.5*	46.4‡	0.3*‡	37.5	1.0*	217.7	1.6*	53.0	0.4*
No†	95.4	0.9	19.9‡	0.2‡	16.8‡	0.2‡	132.0	0.4	34.6	0.3	11.8‡	0.1‡

† reference category
* significantly different from estimate for reference category ($p<0.05$)
‡ coefficient of variation 16.6% to 33.3% (use with caution)
F coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability)
Source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Table C
Adjusted odds ratios relating WMH-CIDI-measured disorders to fair/poor self-rated mental health, by type of disorder and selected characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Any			Depression			Bipolar I			Panic disorder			Social phobia			Agoraphobia			Multiple		
		95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval	
Characteristics	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to
Recency of disorder																					
Past month	11.2*	9.1	13.9	22.4*	16.5	30.4	13.1*	7.4	23.2	11.4*	7.8	16.7	13.7*	10.7	17.5	5.5*	2.9	10.6	37.3*	22.9	60.8
Past 2 to 12 months	6.3*	5.2	7.7	8.1*	6.5	10.1	7.4*	5.1	10.7	6.2*	2.8	13.9	7.6*	5.7	10.2	4.7*	2.3	9.9	6.8*	4.7	9.7
Lifetime, not past 12 months	2.4*	2.0	2.8	1.9*	1.5	2.3	3.4*	2.5	4.7	2.4*	1.8	3.2	3.4*	2.8	4.2	2.8*	1.7	4.8	2.6*	2.0	3.5
Never†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Sex																					
Male	1.1	0.9	1.2	1.0	0.9	1.2	0.9	0.8	1.1	1.0	0.9	1.1	1.0	0.9	1.1	1.0	0.9	1.1	1.0	0.9	1.1
Female†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Age	1.0	0.99	1.0	0.99*	0.99	1.0	0.99*	0.99	1.0	0.99*	0.99	0.99	0.99*	0.99	1.0	0.99*	0.99	0.99	0.99*	0.99	0.99
Marital status																					
Married/Common-law†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Widowed/Separated/Divorced	1.6*	1.4	1.9	1.6*	1.4	1.9	1.8*	1.5	2.1	1.9*	1.6	2.3	1.9*	1.6	2.2	1.9*	1.6	2.2	1.8*	1.6	2.2
Never married	1.3*	1.1	1.5	1.3*	1.1	1.5	1.3*	1.1	1.6	1.4*	1.2	1.6	1.3*	1.1	1.5	1.3*	1.1	1.6	1.4*	1.1	1.6
Education																					
Less than secondary graduation†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Secondary graduation	0.9	0.7	1.0	0.8*	0.7	1.0	0.9	0.8	1.1	0.9	0.8	1.1	0.9	0.7	1.0	0.9	0.8	1.1	0.9	0.7	1.1
Some postsecondary	0.8	0.6	1.0	0.8	0.7	1.1	0.9	0.7	1.1	0.9	0.7	1.1	0.8	0.7	1.0	0.9	0.7	1.1	0.8	0.7	1.0
College/Trades graduation	0.8*	0.7	1.0	0.8*	0.7	0.9	0.9	0.7	1.0	0.9	0.7	1.0	0.8*	0.7	1.0	0.9*	0.7	1.0	0.9	0.7	1.0
University graduation	0.7*	0.6	0.9	0.6*	0.5	0.8	0.7*	0.6	0.9	0.8*	0.6	0.9	0.7*	0.6	0.9	0.7*	0.6	0.9	0.7*	0.6	0.9
Household income quintile																					
Lowest†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Low-middle	0.7*	0.6	0.9	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.9	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.8
Middle	0.6*	0.5	0.7	0.6*	0.5	0.7	0.5*	0.5	0.7	0.6*	0.5	0.7	0.6*	0.5	0.7	0.5*	0.5	0.6	0.6*	0.5	0.7
High-middle	0.6*	0.5	0.7	0.5*	0.5	0.7	0.6*	0.5	0.7	0.6*	0.5	0.7	0.5*	0.4	0.7	0.5*	0.5	0.7	0.6*	0.5	0.7
Highest	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4
Immigrant																					
Yes	1.0	0.8	1.2	0.9	0.8	1.1	0.9	0.7	1.1	0.9	0.7	1.1	1.0	0.8	1.2	0.9	0.7	1.0	0.9	0.8	1.1
No†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Chronic condition																					
Yes	2.4*	2.0	2.8	2.7*	2.3	3.1	2.8*	2.4	3.3	2.9*	2.4	3.4	2.7*	2.3	3.2	3.0*	2.6	3.5	2.8*	2.4	3.3
No†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..

† reference category
* significantly different from estimate for reference category ($p<0.05$)
.. not applicable
Note: Missing category included in models for household income and chronic condition to maximize sample size, but odds ratios not shown.
Source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Table D
Adjusted odds ratios relating self-reported diagnosed mental disorders to fair/poor self-rated mental health, by type of disorder and selected characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Any			Dysthymia			Schizophrenia			Psychosis			Post-traumatic stress disorder			Multiple		
		95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval	
Characteristics	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to	Odds ratio	from	to
Presence of disorder																		
Yes	10.2*	8.4	12.6	11.3*	6.8	18.7	11.5*	6.3	21.1	12.7*	9.5	17.1	8.8*	6.7	11.7	23.0*	14.5	36.4
No†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Sex																		
Male	1.0	0.9	1.1	1.0	0.9	1.1	1.0	0.9	1.1	1.0	0.9	1.1	1.0	0.9	1.1	1.0	0.9	1.1
Female†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Age	0.99*	0.99	0.99	0.99*	0.98	0.99	0.99*	0.98	0.99	0.99*	0.99	0.99	0.99*	0.99	0.99	0.99*	0.99	0.99
Marital status																		
Married/Common-law†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Widowed/Separated/Divorced	1.8*	1.6	2.2	1.9*	1.6	2.2	1.9*	1.6	2.2	1.9*	1.6	2.2	1.9*	1.6	2.2	1.9*	1.6	2.2
Never married	1.3*	1.1	1.5	1.3*	1.1	1.5	1.3*	1.1	1.5	1.3*	1.1	1.5	1.3*	1.2	1.6	1.3*	1.1	1.6
Education																		
Less than secondary graduation†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Secondary graduation	0.9	0.7	1.1	0.9	0.7	1.1	0.9	0.7	1.1	0.9	0.7	1.1	0.9	0.8	1.1	0.9	0.8	1.1
Some postsecondary	0.8	0.7	1.0	0.9	0.7	1.1	0.9	0.7	1.1	0.9	0.7	1.1	0.8	0.7	1.0	0.9	0.7	1.1
College/Trades graduation	0.8*	0.7	1.0	0.8*	0.7	1.0	0.9*	0.7	1.0	0.8*	0.7	1.0	0.8*	0.7	1.0	0.9*	0.7	1.0
University graduation	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.9	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.9
Household income quintile																		
Lowest†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Low-middle	0.7*	0.6	0.9	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.8	0.7*	0.6	0.8
Middle	0.6*	0.5	0.7	0.5*	0.5	0.6	0.6*	0.5	0.7	0.6*	0.5	0.7	0.5*	0.5	0.7	0.5*	0.5	0.7
High-middle	0.6*	0.5	0.7	0.5*	0.4	0.7	0.5*	0.5	0.7	0.6*	0.5	0.7	0.6*	0.5	0.7	0.5*	0.5	0.7
Highest	0.4*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4	0.3*	0.3	0.4
Immigrant																		
Yes	0.9	0.8	1.1	0.9	0.7	1.0	0.9	0.7	1.0	0.9	0.7	1.1	0.9	0.7	1.1	0.9	0.7	1.0
No†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..
Chronic condition																		
Yes	2.7*	2.4	3.2	3.0*	2.6	3.5	3.0*	2.6	3.5	2.9*	2.5	3.4	2.9*	2.5	3.3	3.0*	2.6	3.5
No†	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..	1.0	..	..

† reference category
* significantly different from reference category ($p<0.05$)
.. not applicable
Note: Missing category included in models for household income and chronic condition to maximize sample size, but odds ratios not shown
Source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Table E
Adjusted odds ratios relating psychological distress to fair/poor self-rated mental health, by selected characteristics, population aged 15 or older, Canada excluding territories, 2002

Characteristics	Odds ratio	95% confidence interval from	to
Level of distress			
High (score 13 to 24)	28.2*	22.9	34.7
Moderate (score 9 to 12)	8.4*	7.1	10.0
None (score 0 to 8)†	1.0	..	..
Sex			
Male	1.0	0.9	1.1
Female†	1.0	..	..
Age	1.00*	0.99	1.00
Marital status			
Married/Common-law†	1.0	..	..
Widowed/Separated/Divorced	1.8*	1.5	2.1
Never married	1.3*	1.1	1.5
Education			
Less than secondary graduation†	1.0	..	..
Secondary graduation	0.9	0.8	1.1
Some postsecondary	0.9	0.7	1.1
College/Trades graduation	0.9	0.8	1.1
University graduation	0.8*	0.7	1.0
Household income quintile			
Lowest†	1.0	..	..
Low-middle	0.8*	0.7	1.0
Middle	0.7*	0.6	0.8
High-middle	0.7*	0.6	0.9
Highest	0.5*	0.4	0.6
Immigrant			
Yes	0.9	0.7	1.1
No†	1.0	..	..
Chronic condition			
Yes	2.3*	2.0	2.7
No†	1.0	..	..

† reference category
* significantly different from estimate for reference category ($p<0.05$)
.. not applicable

Note: Missing category included in models for household income and chronic condition to maximize sample size, but odds ratios not shown.

Source: 2002 Canadian Community Health Survey: Mental Health and Well-being